

### **REMARKS - General**

By the above amendment, applicant has amended the title to emphasize the novelty of the invention.

Application has also rewritten all of the claims to define the invention more particularly and distinctly so as to overcome the technical objections and rejections and define the invention patentably over the prior art references.

### **The Objection To The Disclosure Objections**

The disclosure is objected to because of the informalities as stated in the Office Action.

There are a total of 26 item informalities that are objected in the disclosure. Applicant has currently amended all of the item informalities in the disclosure. Accordingly, applicant submits that the disclosure complies with Examiner's requirements and therefore requests reconsideration and withdrawal of the objections.

### **The Objection To The Claims Objections**

The claims 1, 10, 12-15, 17, and 19 were objected because of the following informalities as stated in the Office Action.

Applicant has cancelled all of above claims and substituted new claims with correct informalities based on Examiner's requirements. Accordingly, applicant submits that the new claims comply with Examiner's requirements and therefore requests reconsideration and withdrawal of the objections.

**The Rejection of Claims 1 - 3, 6 - 7 on Crochiere, et al. (Multirate Digital Signal Processing; 1983; Prentice-Hill) in view of Tewfik (High Bit Rate Ultra-Wideband OFDM; Nov. 17-21, 2002; IEEE Globecom 2002; pages 2260-2264) Under 35 USC 103(a) Are Overcome.**

The office action rejected the independent claim 1 and the dependent claims 2-3, 6-7 over the book of Crochiere, et al. in view of the paper on Tewfik.

The independent claim 1 and the dependent claims 2-3, 6-7 are canceled. A new independent claim 20 and new dependent claims 21-23, 25-26 are substituted.

**The Rejection of Claims 4 - 5 on Crochiere, et al. (Multirate Digital Signal Processing; 1983; Prentice-Hill) in view of Tewfik (High Bit Rate Ultra-Wideband OFDM; Nov. 17-21, 2002; IEEE Globecom 2002; pages 2260-2264) and further in view of Van Nee (US Patent 6,175,550) Under 35 USC 103(a) Are Overcome.**

The office action rejected the dependent claims 4 - 5 over the book of Crochiere, et al. in view of the paper on Tewfik and further in view of the patent on Van Nee.

The dependent claims 4 - 5 are canceled. New dependent claims 23 - 24 are substituted.

**The Rejection of Claims 8 - 10 on Crochiere, et al. (Multirate Digital Signal Processing; 1983; Prentice-Hill) in view of Tewfik (High Bit Rate Ultra-Wideband OFDM; Nov. 17-21, 2002; IEEE Globecom 2002; pages 2260-2264) and further in view of McClellan (A Unified Approach to the Design of Optimum FIR Linear Phase Digital Filters; Nov. 1973; IEEE Transactions on Circuit Theory; pages 697 - 701) Under 35 USC 103(a) Are Overcome.**

The office action rejected the independent claim 8 and the dependent claims 9 - 10 over the book of Crochiere, et al. in view of the paper on Tewfik and further in view of the paper on McClellan.

The independent claim 8 and the dependent claims 9 - 10 are canceled. New dependent claims 27 - 29 are substituted.

**The Rejection of Claim 11 on Crochiere, et al. (Multirate Digital Signal Processing; 1983; Prentice-Hill) in view of Tewfik (High Bit Rate Ultra-Wideband OFDM; Nov. 17-21, 2002; IEEE Globecom 2002; pages 2260-2264) and further in view of McClellan (A Unified Approach to the Design of Optimum FIR Linear Phase Digital Filters; Nov. 1973; IEEE Transactions on Circuit Theory; pages 697 - 701) and Van Nee (US 6,175,550) Under 35 USC 103(a) Are Overcome.**

The office action rejected the dependent claim 11 over the book of Crochiere, et al. in view of the paper on Tewfik and further in view of the paper on McClellan and the patent on Van Nee.

The dependent claim 11 is canceled. The new dependent claim 30 is substituted.

**The Rejection of Claim 12 on Crochiere, et al. (Multirate Digital Signal Processing; 1983; Prentice-Hill) in view of Tewfik (High Bit Rate Ultra-Wideband OFDM; Nov. 17-21, 2002; IEEE Globecom 2002; pages 2260-2264) and further in view of McClellan (A Unified Approach to the Design of Optimum FIR Linear Phase Digital Filters; Nov. 1973; IEEE Transactions on Circuit Theory; pages 697 - 701), Van Nee (US 6,175,550) and Agee (US 6,128,276) Under 35 USC 103(a) Are Overcome.**

The office action rejected the dependent claim 12 over the book of Crochiere, et al. in view of the paper on Tewfik and further in view of the paper on McClellan and the patents on Van Nee and on Agee.

The dependent claim 12 is canceled. The new dependent claim 31 is substituted.

**The Rejection of Claim 13 on Crochiere, et al. (Multirate Digital Signal Processing; 1983; Prentice-Hill) in view of Tewfik (High Bit Rate Ultra-Wideband OFDM; Nov. 17-21, 2002; IEEE Globecom 2002; pages 2260-2264) and further in view of Gerereux (US 5,272,656) Are Overcome.**

The office action rejected the independent claim 13 over the book of Crochiere, et al. in view of the paper on Tewfik and further in view of the patent on Gerereux.

The independent claim 13 is canceled. The new dependent claim 32 is substituted.

**The Rejection of Claim 14 - 17 on Crochiere, et al. (Multirate Digital Signal Processing; 1983; Prentice-Hill) in view of Tewfik (High Bit Rate Ultra-Wideband OFDM; Nov. 17-21, 2002; IEEE Globecom 2002; pages 2260-2264) and further in view of Gerereux (US 5,272,656) and McClellan (A Unified Approach to the Design of Optimum FIR Linear Phase Digital Filters; Nov. 1973; IEEE Transactions on Circuit Theory; pages 697 - 701) Are Overcome.**

The office action rejected the dependent claims 14 - 17 over the book of Crochiere, et al. in view of the paper on Tewfik and further in view of the patent on Gerereux and paper on McClellan.

The dependent claims 14 - 17 are canceled. The new dependent claims 33 - 36 are substituted.

**The Rejection of Claim 18 on Crochiere, et al. (Multirate Digital Signal Processing; 1983; Prentice-Hill) in view of Tewfik (High Bit Rate Ultra-Wideband OFDM; Nov. 17-21, 2002; IEEE Globecom 2002; pages 2260-2264) and further in view of Gerereux (US 5,272,656) and Van Nee (US 6,175,550) Are Overcome.**

The office action rejected the dependent claims 18 over the book of Crochiere, et al. in view of the paper on Tewfik and further in view of the patents on Gerereux and Van Nee.

The dependent claim 18 is canceled. The new dependent claim 37 is substituted.

**The Rejection of Claim 19 on Crochiere, et al. (Multirate Digital Signal Processing; 1983; Prentice-Hill) in view of Tewfik (High Bit Rate Ultra-Wideband OFDM; Nov. 17-21, 2002; IEEE Globecom 2002; pages 2260-2264) and further in view of Gerereux (US 5,272,656) and Van Nee (US 6,175,550) and Agee (US 6,128,276) Are Overcome.**

The office action rejected the dependent claims 19 over the book of Crochiere, et al. in view of the paper on Tewfik and further in view of the patents on Gerereux and Van Nee and Agee.

The dependent claim 19 is canceled. The new dependent claim 38 is substituted.

All of the new claims 20 - 38 are to emphasize the novelty of the invention and to define patentably over these prior-art references, and/or any combination thereof. Applicant requests reconsideration of these rejections, as now applicable to the new independent claim 20 and the corresponding dependent claims 21 - 34 and the independent claim 35 and the new dependent claims 37 - 38 for the following reasons:

- (1) There are no justification, in Crochiere, et al., or in any other prior arts separate from applicant's disclosure, which suggest that these references be individual or be combination way in the manner proposed.
- (2) Even if Crochiere, et al., Tewfik, McClellan, Gerereux, Van Nee, and Agee were to be combined in the manner proposed, the proposed combination would not show all the novel physical feature of the new claims 20 – 38.
- (3) These novel physical features of the new claims 20 – 38 produce new and unexpected results in such a way that proposed the multichannel filter-based handheld UWB communications completely operate in the different methods and deal with the different UWB signals in the different situations that Crochiere, et al. or any other prior arts suggested, and therefore are novelty, unobvious and patentable over these prior-art references.

#### **The References And Differences Of The Present Invention Thereover**

Prior to discussing the claims and the above three points, applicant will first discuss the prior-art references and the general novelty of the present invention and its unobviousness over these prior-art references.

**Present Invention** - The present invention is a next-generation handheld UWB communications, especially designed for outdoor wireless operations. The invented communication system is a multichannel and multicarrier UWB communication solution, which is employed a new technology based on an UWB multichannel transmitter and receiver filter system along with a novel architecture. The UWB multichannel transmitter and receiver filter system, which proves a multichannel-based multicarrier modulation, meets FCC requirements of the outdoor UWB emission limitation. The invented transceiver system is able to transmit a very high data rate up to 7.150 Gcps during the outdoor operations. In addition, the present invention of the multichannel filter-based handheld UWB Communications can not only transmit a very high data rate with scalability but also eliminate interference to the WLAN 802.11 devices, thereby allowing multi-devices to communicate and/or operate each other without interference.

**Crochiere, et al.** presented a multichannel filter (page 292, Fig. 7.3; page 299, Fig. 7.8 element “Synthesize”; page 290, Section 7.1, Page 300, end of the section 7.2.1) a digital FIR lowpass-shaping filter (page 299, Fig. 7.8), a digital cascaded FIR filter (page 299, Fig. 7.8; page 297, page 258), the digital FIR low shaping filter (page 258, Fig. 6.4), the spectrum mask (page 259, Fig. 6.4; page 260), a multichannel spectrum (page 297, page 258), and a digital rejected FIR lowpass filter (Fig. 6.5). It can be seen that the multichannel filter is a filter bank, which is implemented by polyphase analysis and synthesis structures. All of subchannel filters are derived from the multichannel filter based on input samples with different phases. In other words, all the subchannel filters are a subset of the multichannel filter coefficients. It is also that Crochiere’s digital lowpass filter, rejected FIR lowpass filter and/or the multichannel filter do not address an UWB communication transceiver. Furthermore, Crochiere does not disclose any methods in which can be used to reduce interference with WLAN device’s operation. In addition, Crochiere does not disclose how to provide scalability data rate for an UWB transmitter.

However, the applicant’s invention develops an UWB multichannel filter, which can be reused for all channels based on the UWB emission spectrum. It is the same UWB multichannel filter for all the UWB channels rather than subchannel filters with a subset filter coefficients. In addition, the applicant’s multichannel filter is integrated with a novel UWB transmitter and receiver architectures that are especially designed for the outdoor UWB applications. The applicant’s invention is not only to transmit scalability data rates in a very high speed but also to avoid interference with WLAN device’s operations. Furthermore, the applicant’s lowpass-shaping FIR filter within the UWB transceiver structure uses a multi-transition band mask that especially meets the FCC UWB emission limitation. Hence, it is clear that the applicant’s multichannel filter and/or digital lowpass-shaping FIR filters are different from Crochiere’s multichannel filter/digital FIR lowpass filter.

Therefore, the applicant’s invention of using the multichannel filter-based handheld Ultra Wideband communications is different from what Crochiere used the multichannel filter, the digital lowpass shaping FIR filter, or the digital rejected filter.

**Tewfik, et al.** disclosed a high bit rate Ultra-Wideband OFDM (page 2260 – page 2264; Fig. 1; Equations 1 and 2). Tewfik introduced an UWB OFDM system using a pulse design method, which is a pulse sequence with uniform spaced in time domain, such as rectangular or Gaussian pulse. Fig. 1 in Tewfik's paper shows the pulse sequence in time domain rather than in frequency domain. Tewfik focused on the formula developments rather than an UWB transceiver system and architecture. Furthermore, Tewfik did not address a multichannel filter, a digital lowpass-shaping filter or a digital rejected FIR filter design based on FCC emission limitation. In addition, Tewfik did not present any methods of transmitting a very high data rate with scalability and reducing interference with WLAN device's operations.

Note that the applicant's invention presents the multichannel filter-based handheld Ultra Wideband communications with a set of novel architectures along with a new multichannel transmitter and receiver filter system. The applicant's invention is able to transmit scalability data rates in a very high speed while interference between UWB transceivers and WLAN devices can be eliminated. It is also clear that the applicant's multichannel filter and/or digital lowpass-shaping FIR filters are different from Tewfik's pulse sequence design, which is used for an OFDM operation.

Therefore, the applicant's invention of using the multichannel filter-based handheld Ultra Wideband communications along with a set of novel transmitter and received architectures and operation functions is different from what Tewfik's presentation on pulse sequence methods.

**Van Nee** disclosed an orthogonal frequency division multiplexing (OFDM) system with dynamically scalable operating parameters and method thereof (column 3, lines 21-27; column 11, lines 23-28) with regard to the scalability data rates with multi-carrier frequencies based on an FFT approach. It is clear that Van Nee's OFDM system uses FFT and/or IFFT and each of multichannels with multi-carriers is indeed each FFT frequency bin. In other words, the number of the multichannels with multi-carrier is equal to the number of point FFT, which is transmitted with a single channel. On the other hand, the applicant's invention is the multichannel filter-based handheld Ultra Wideband

communications, which each of the multichannels is also called a multiband approach. The multiband approach is different from an OFDM approach since each multiband (or multichannel) only includes a carrier, while the OFDM includes a number of carriers with a channel. The OFDM is based on FFT that is frequency approach while the applicant's invention does not use an FFT. The multichannels (or multibands) are formed by using a digital lowpass FIR filter along with a multicarrier modulation. Therefore, the applicant's invention with scalability data rates is different from what Van Nee's method on scalability data rates in an FFT approach.

**McClellan, et al.** introduced a unified approach to the design of optimum FIR linear-phase digital filters by using the Remez algorithm, which has become to one of methods for designing a standard digital lowpass FIR filter. However, McClellan does not address how to design transmitter and receiver filter system for an UWB communication transceiver. The applicant's invention is the multichannel filter-based handheld Ultra Wideband communications. The multichannel filter system including transmitter and receiver is one of subsystems in the handheld UWB communication transceiver. Thus, it is clear that the applicant's invention on the multichannel filter-based handheld UWB communications transceiver is different from what McClellan's method on a standard digital lowpass FIR filter design.

**Agee** disclosed a stacked-carrier discrete multiple tone communication technology and combinations with code nulling, interference cancellation, retrodirective communication and adaptive antenna arrays, which is that spreading energizes the bins of FFT (OFDM)-based communication. Referring to column 2 with lines 25-29 states "... under strong narrow-band interference, e.g., conventional cellular signal waveforms, by turning off affected frequency channels at a receiver despreader." Thus, it is clear that Agee's invention of reducing interference by turning off affected channels at the receiver rather than at the transmitter. In addition, Agee's invention considers the system to avoid interference from other devices. In other words, Agee's invention does not consider reducing interference to other devices. The applicant's invention considers reducing



interference to other devices, such as WLAN devices, thereby leading to shut off some of channels at the transmitter to avoid interference to WLAN device operations at same environment. Therefore, the applicant's invention on the multichannel filter-based handheld UWB communications is different from what Agee's method on reducing interference for an affected frequency channels at a receiver despreader.

**Genereux** disclosed a system and method of producing adaptive FIR digital filter with non-linear frequency resolution, which is an FIR with high resolution at low frequencies by having a large number of coefficients, but reduces resolution at higher frequencies by allowing only a fraction of the coefficients to adapt to the high frequency part of the signal. Referring to the column 8 with lines 38-50, Genereux's invention is to insert  $(L-1)$  zero value coefficients between each of the original coefficients and append  $[(M-1)/2]-1$  zeros to the end, where  $M$  is the lowpass filter coefficients. Genereux's filter is used for adaptive approach. The applicant's invention is to inserting one zero into the between of two filter coefficients. Thus, the application's filter is different from Genereux's filter not only in impulse response but also in filter frequency response and architecture since the applicant's filter has multi-transition bands for transmitting, which is not an adaptive filter. In addition, the application's filter is a multichannel transmitter and receiver filter system integrated with a novel UWB transceiver architecture. Thus, the applicant's invention of using the multichannel filter-based handheld UWB communications is different from what Genereux's method on inserting zeros into the filter coefficients and appending zeros to the end for adaptive filter applications.

In summary, **Crochiere, et al., Tewfik, et al., Van Nee, McClellan, et al., Agee,** and **Genereux** are arts but they are different from each other. Crochiere, et al. presented a multichannel filter based on filter bank approach. Tewfik, et al. presented a high bit rate Ultra-Wideband OFDM. Van Nee invented an OFDM system with dynamically scalable operating parameters and method with regard to the scalability data rates with multi-carrier frequencies based on an FFT approach. McClellan, et al. presented a unified approach to the design of optimum FIR linear-phase digital filters by using the Remez

algorithm. Agee invented a stacked-carrier discrete multiple tone communication technology and combinations with code nulling, interference cancellation, retrodirective communication and adaptive antenna arrays, which is a spreading code-based FFT OFDM communication system. Genereux invented a system and method of producing adaptive FIR digital filter with non-linear frequency resolution. They are for individual different design methods and different communication systems. Applicant's invention is the multichannel filter-based handheld UWB communications. It is designed for wireless broadband handheld communications at outdoor environment. In addition, it is a single UWB communication device that is enable to transmit a very-high data rate with scalability and programmability as well as to avoid interference with other WLAN devices. Therefore, application's invention of using the multichannel filter-based handheld UWB communications transceiver system is fundamentally different from the Crochiere, et al., Tewfik, et al., Van Nee, McClellan, et al., Agee, and Genereux's systems or any combination thereof. As a result, it is impossible and unobvious to one having ordinary skill in the art to develop the multichannel filter-based handheld UWB communications transceiver even given Crochiere, et al., Tewfik, et al., Van Nee, McClellan, et al., Agee, and Genereux's prior-art references.

**Crochiere, et al., Tewfik, et al., Van Nee, McClellan, et al., Agee, and Genereux's Do Not Contain Any Justification To Support Individual or Their Combination, Much Less In The Manner Proposed**

With regard to the individual invention of Crochiere, et al., Tewfik, et al., Van Nee, McClellan, et al., Agee, and Genereux, it has been shown that there are fundamentally differences between the applicant's invention and the individual invention of Crochiere, et al., Tewfik, et al., Van Nee, McClellan, et al., Agee, and Genereux as the applicant discussed above. Therefore, it is invalid to use any prior-art references to reject the applicant's invention under 35 U.S.C. 103(a).

With regard to any combination of Crochiere, et al., Tewfik, et al., Van Nee, McClellan, et al., Agee, and Genereux's prior art references, it is well known that in order to for any prior-art references themselves to be validly combined for use in a prior-art

rejection of the Section 103, the reference themselves (or some other prior art) must suggest that they be combined, e.g., as was stated in In re Sernaker, 217 U.S.P.Q. 1,6 (C.A.F.C. 1983):

“Prior art references in combination do not make an invention obvious unless something in the prior art references would suggest the advantage to be derived from combining their teaching.”

That the suggestion to combine the references should not come from the applicant was forcefully stated on Orthopedic Equipment Co. v. United States, 217 U.S.P.Q. 193, 199 (CAFC 1983):

“It is wrong to use the patent in suit [here the patent application] as a guide through the maze of prior art references, combining the right references in the right way to achieve the result of the claims in suit [here the claims pending]. Monday morning quarterbacking is quite improper when resolving the question of nonobviousness in a court of law [here the PTO].”

As was further stated in Uniroyal, Inc. v. Rudkin-Wiley Corp., 5 U.S.P.Q.2d 1434 (C.A.F.C. 1988):

“[w]here prior-art references require selective combination by the court to render obvious a subsequent invention, there must be some reason for the combination other than the hindsight gleaned from the invention itself. . . . Something in the prior art must suggest the desirability and thus the obviousness of making the combination.” [Emphasis supplied]

In line with these decisions, the Board stated in Ex parte Levengood, 28 U.S.P.Q.2d 1300 (P.T.O.B.A.&I, 1993):

“In order to establish a prima facie case of obviousness, it is necessary for the examiner to present evidence, preferably in the form of some teaching, suggestion, incentive or inference in the applied prior art, or in the form of generally available knowledge, that one having ordinary skill in the art would have been led to

combine the relevant teachings of the applied references in the proposed manner to arrive at the claimed invention, ... That which is within the capabilities of one skilled in the art is not synonymous with obviousness. ... That one can reconstruct and/or explain the theoretical mechanism of an invention by means of logic and sound scientific reasoning does not afford the basis for an obviousness conclusion unless that logic and reasoning also supplies sufficient impetus to have led one of ordinary skill in the art to combine the teachings of the references to make the claimed invention .... Our reviewing courts have often advised the Patent and Trademark Office that it can satisfy the burden of establishing a prima facie case of obviousness only by showing some objective teaching in either the prior art, or knowledge generally available to one of ordinary skill in the art, that “would lead” that individual ‘to combine the relevant teachings of the references.’ ...

Accordingly, an examiner cannot establish obviousness by locating references which describe various aspects of a patent applicant’s invention without also providing evidence of the motivating force which would impel one skilled in the art to do what the patent applicant has done.”

In the present case, there is no reason given in the Office Action on September 29, 2006, to support the proposed combination, other than the statements: “It would have been obvious to one having ordinary skill in the art, at the time the invention was made, to use the method, as taught by Tewfik, in the system of Crochiere;” “It would have been obvious to one having ordinary skill in the art, at the time the invention was made, to use the method, as taught by Van Nee, in the system of Crochiere;” “It would have been obvious to one having ordinary skill in the art, at the time the invention was made, to use the method, as taught by McClellan, in the system of Crochiere;” “It would have been obvious to one having ordinary skill in the art, at the time the invention was made, to use the method, as taught by Van Nee, in the system of Crochiere;” “It would have been obvious to one having ordinary skill in the art, at the time the invention was made, to use the method, as taught by Agee, in the system of Crochiere;” and “It would have been obvious to one having ordinary skill in the art, at the time the invention was made, to use

the method, as taught by Genereux, in the system of Crochiere;” However, the fact that all of the prior-art references either in individual or any combination form is not sufficient to gratuitously and selectively substitute parts of one reference for a part of another reference in order to meet the applicant’s novel claims because there are fundamental differences between the applicant’s invention of the multichannel filter-based handheld UWB communications and Crochiere’s filter bank approach, Tewfik’s Ultra-Wideband OFDM, Van Nee’s OFDM system based on an FFT approach, McClellan’s optimum FIR linear-phase digital filters design, Agee’s discrete multiple tone communication technology, and Genereux’s adaptive FIR digital filter. Thus, the applicant submits the fact that the multichannel filter-based handheld UWB communications transceiver produces advantages militates in favor of the applicant because it proves that the applicant’s invention produces new and unexpected results and hence is unobvious.

As stated in the above Levengood case again:

“That one can reconstruct and/or explain the theoretical mechanism of an invention by means of logic and sound scientific reasoning does not afford the basis for an obviousness conclusion unless that logic and reasoning also supplies sufficient impetus to have led one of ordinary skill in the art to combine the teachings of the references to make the claimed invention.”

Therefore, the applicant submits that individual or any combination form of Crochiere, Tewfik, Van Nee, McClellan, Agee, and Genereux is not legally justified and is therefore improper. Thus, the applicant submits that the rejection on these prior-art references is also improper and should be withdrawn.

**Even If Crochiere, Tewfik, Van Nee, McClellan, Agee, and Genereux Were To Be Combined In The Manner Proposed, The Proposed Combination Would Not Show All The Novel Physical Feature Of the Claims 20 and 35**

However, even if any combination of Crochiere, Tewfik, Van Nee, McClellan, Agee, and Genereux were legally justified, the claims 20 and 35 would still have novel and unobvious physical features over the proposed combination. In other words, the applicant's invention, as defined by the claims 20 and 35, comprises much more than merely substitutes a plurality of templates to one template. Furthermore, there are fundamentally differences between the applicant's invention of the physical feature structure and expected results, and any combination of Crochiere, Tewfik, Van Nee, McClellan, Agee, and Genereux. It is also clear that the applicant's invention has novel and unobvious physical features over any prior-art references.

Thus, the applicant submits that the present invention of the multichannel filter – based handheld UWB communications is much more than merely substituting a plurality of templates for one template and that the claims 20 and 35 clearly recites novel physical subject matter, which distinguishes over individual or any possible combination of Crochiere, Tewfik, Van Nee, McClellan, Agee, and Genereux.

**The Novel Physical Features Of the Claims 20 and 35 Produce New And Unexpected Results And Hence Are Unobvious And Patentable Over These References Under Section 103.**

The applicant also submits that the novel physical features of the claims 20 and 35 is unobvious and hence patentable under Section 103 since it produces new and unexpected results over Crochiere, Tewfik, Van Nee, McClellan, Agee, and Genereux or any combination thereof.

These new and unexpected results are the ability of the applicant's invention of the multichannel filter-based handheld UWB communications not only to transmit UWB signals at a very-high data rate with scalability and programmability in the outdoor operations for wireless broad communications but also to avoid interference with other

WLAN devices, thereby achieving co-existence with multiple communication devices at the same environments.

Therefore, the applicant's invention of the multichannel filter-based handheld UWB communications transceiver is a novel and vastly superior to that of either Crochiere, Tewfik, Van Nee, McClellan, Agee, and Genereux or any possible combination thereof. The novel physical features of the applicant's invention of the multichannel filter-based handheld UWB communications transceiver that affects these differences are, as stated, clearly recited in the claims 20 and 35.

### **The Dependent Claims Are A Fortiori Patentable Over Crochiere, Tewfik, Van Nee, McClellan, Agee, and Genereux**

The new dependent claims 21-34 and the new dependent claims 36-38 incorporate all the subject matter of the new independent claims 20 and 35 and add additional subject matter that makes them a fortiori and independently patentable over these prior-art references. Accordingly, the applicant submits that the new dependent claims 21-34, and the new dependent claims 36-38 are a fortiori patentable and should also be allowed.

### **Conclusion**

For all the reasons given above, the applicant respectfully submits that the specification and claims are new in proper form, and that the claims all define patentable over the prior-art references. Therefore, the applicant submits that this application is now in full condition for allowance, which action applicant respectfully solicits.

### **Conditional Request For Constructive Assistance**

The applicant has amended the specification and rewritten the new claims of this application so that they are proper, definite, and define novel physical feature structure, which is also unobvious. Therefore, this application is submitted that patentable subject matter is clearly present. If, for any reason this application is not believed to be in full condition for allowance, the applicant respectfully requests the constructive assistance and suggestions of Examiner pursuant to M.P.E.P. Section 2173.02 and Section 707.07(j)

in order that the undersigned can place this application in allowable condition as soon as possible and without the need for further proceedings.

Very respectfully,



George J. Miao, Ph.D.

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Date: November 27, 2006

Inventor's Signature:

